

# Friday February 1, 2019

## How do I get ready for class?

- 1) On Desk: binder, pens/pencils
- 2) You are tardy if you are not in your seat when the bell rings

## Homework:

Factoring when a not 1

## Upcoming.....

Quiz on Tuesday

## Warm Up: Factor the quadratic expressions.

1)  $\frac{-4x^2 - 2x}{-2x \quad -2x}$  GCF =  $-2x$     2)  $\frac{4x^2 + 12x + 8}{4 \quad 4 \quad 4}$  GCF =  $4$   
 $-2x(2x + 1)$                        $4(x^2 + 3x + 2)$

**Get ready to turn in your warm up sheets. (No Blanks)**

# Standard(s)

**MGSE9–12.A.SSE.3a** Factor any quadratic expression to reveal the zeros of the function defined by the expression.

Day 3 – Factor Trinomials with a #1

Standard(s): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



What do you already know about the standards?

# Factoring Trinomials when a not 1

$$ax^2 + bx + c$$

$$2x^2 + 3x + 6$$

## Factor: $2x^2 + 3x - 2$

<p><b>STEP 1:</b></p> <ul style="list-style-type: none"> <li>ALWAYS check to see if you can factor out a GCF.</li> </ul>	$2x^2 + 3x - 2$ $a=2$ $b=3$ $c=-2$
<p><b>STEP 2:</b></p> <ul style="list-style-type: none"> <li>Multiply the coefficients of the "a" and "c" terms together and place that number in the top of the "number diamond"</li> <li>Place the coefficient of the "b" term in the bottom.</li> <li>Make a factor t-chart for the factors of "a.c"</li> <li>Determine what two numbers can be multiplied to get your "a.c" term and added to get your "b" term.</li> </ul>	<p>Number Diamond:</p> $\begin{array}{c} (2)(-2) \\ + -4 \\ -1 \quad +4 \\ \times \\ 3 \\ \text{Sum} = b \end{array}$ <p>Factors of a.c:</p> $\begin{array}{c} -4 \\ 1 \quad 4 \\ 2 \quad 2 \end{array}$
<p><b>STEP 3:</b></p> <ul style="list-style-type: none"> <li>Create a 2x2 Area Model and place your original "a" term in the top left box and "c" term in the bottom right box.</li> <li>Fill the remaining two boxes with the two numbers you found in your number diamond and place an x after them.</li> </ul>	<p>Area Model:</p> $\begin{array}{cc} & X & +2 \\ 2x & 2x^2 & +4x \\ -1 & -1x & -2 \end{array}$
<p><b>STEP 4:</b></p> <ul style="list-style-type: none"> <li>Factor out a GCF from each row and column to create the binomials or factors you are looking for.</li> </ul>	<p>Factored Form: <math>(x+2)(2x-1)</math></p>
<p><b>STEP 5:</b></p> <ul style="list-style-type: none"> <li>Check your factors on the outside by multiplying them together to make sure you get all the expressions in your box.</li> </ul>	

## Factoring when $a \neq 1$

Using the Area Model. Factor the trinomials.

1.  $5x^2 + 14x - 3$      $a=5$     $b=14$     $c=-3$

	$5x$	$-1$
$x$	$5x^2$	$-1x$
$+3$	$+15x$	$-3$

$a \cdot c$
<del><math>-15</math></del>
<del><math>+15</math></del>
$14$
$b$

$5$	$15$
$1$	$3$
$5$	$5$

Factored Form:  $(x+3)(5x-1)$

## Factoring when $a \neq 1$

Using the Area Model. Factor the trinomials.

Look at this example. (HINT: Is there a GCF?)

4.  $\frac{6x^2}{2} - \frac{40x}{2} + \frac{24}{2}$      $a=3$     $b=-20$     $c=12$

$2(3x^2 - 20x + 12)$      $\frac{a \cdot c}{36}$     $-2$     $-18$

	$3x$	$-2$
$x$	$3x^2$	$-2x$
$-6$	$-18x$	$+12$

Factored Form:  $2(3x-2)(x-6)$

## Factoring Trinomials using the Area Model

**Practice:** Take a look at the following trinomials and factor out the GCF, then use the Area Model to factor.

a.  $\frac{12x^2}{4} + \frac{56x}{4} + \frac{64}{4}$

$4(3x^2 + 14x + 16)$      $a=3$     $b=14$     $c=16$

	$3x$	$+8$
$x$	$3x^2$	$+8x$
$+2$	$+6x$	$16$

$a \cdot c$
<del><math>3 \cdot 16</math></del>
<del><math>48</math></del>
$14$
$b$

$4(3x+8)(x+2)$